

claval veins are not fused in *S. quadrifidus*.

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ON TWO NEW SPECIES OF *CHELONUS* PANZER (HYMENOPTERA: BRACONIDAE) FROM INDIA¹

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(With six text-figures)

Chelonus (Microchelonus) pikenii sp. nov. and *Chelonus (Microchelonus) raoi* sp. nov. are described and illustrated. The Key to the Indian species of *Chelonus (Microchelonus)* by Rao and Chalikwar (1971) is amended.

INTRODUCTION

Chelonus is a moderate sized genus belonging to the subfamily Cheloninae of the family Braconidae. *Chelonus* is divided into two subgenera, namely *Chelonus* Panzer and *Microchelonus* Szepligeti. The earlier works on the Indian species of *Chelonus* are by Subba Rao (1955), Gupta (1955) and Rao and Chalikwar (1971). In the present work two new taxa belonging to the genus *Chelonus*, namely *Chelonus (Microchelonus) pikenii* and *Chelonus*

(*Microchelonus) raoi* are described and the key to the Indian species of *Chelonus (Microchelonus)* by Rao and Chalikwar (1971) is amended to include the new taxa.

Types and other material of these species are in the collection of the junior author for the time being and will be deposited in the National Collection of the Zoological Survey of India, Calcutta, India.

Chelonus (Microchelonus) pikenii sp. nov.

(Figs. 1-3)

MALE : 3.1 mm (Fig. 1). Head (Fig. 2) transverse, 2.5 x as wide as long; vertex rugose, pubescent;

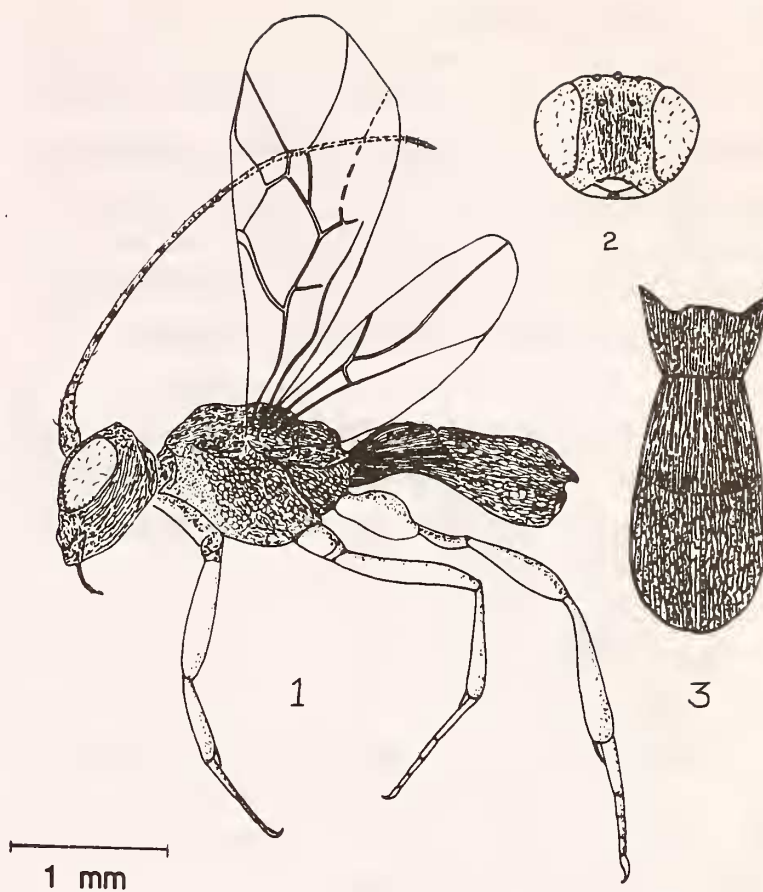
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ocelli in triangle, with broad base, base of the triangle twice the height: frons rugose, without median longitudinal carina, closely punctate, pubescent; face 0.5 times as long as wide, rugose, sparsely punctate, pubescent, with median longitudinal carina; clypeus 0.45 times as long as wide, slightly convex, shiny, closely punctate, pubescent; malar space rugosely, sparsely punctate, pubescent, 1.25 x as long as the basal width of mandible; mandible 3 x as long as the basal width, bidentate, punctate, finely pubescent; antenna 2 + 22 segmented; scape 2.45 x as long as broad, finely, shallowly punctate, finely pubescent; pedicel 0.65 times as long as broad, finely, shallowly punctate, finely pubescent; penultimate segment 1.5 x as long as wide; terminal segment 2 x as long as wide; maxillary palps long, 5 segmented; occipital carina present; temple broad, strigose, moderately punctate, finely pubescent, 0.4 times as wide as height of the eye; eye 2.5 x as long as wide, with fine pubescence.

THORAX: Pronotum closely, deeply punctate, pubescent; mesoscutum rugosely, closely punctate; notauli distinct; disc of scutellum slightly convex, irregularly, reticulately rugose, moderately, shallowly punctate, with lateral depressions; scutellar furrow with nine distinct carinae; mesopleurum irregularly, reticulately rugose, pubescent, with prominent mesopleural suture; metapleurum irregularly, reticulately rugose, pubescent; propodeum (Fig. 3) irregularly rugoso-reticulate, lateral projections distinct. Hind coxa globular, 1.8 x as long as wide; trochanter 0.4 times as long as femur; femur 1.25 x as long as coxa; tibia 1.4 x as long as femur; tibial spur 0.4 times as long as basitarsus; tarsus five segmented; claw simple. Fore wing: 2.6 x as long as broad; stigma 2.8 x as long as wide; radial cell on wing margin 0.8 times as long as stigma; first abscissa of radius 0.4 times as long as first intercubitus, 0.8 times as long as second abscissa of radius; apical abscissa of radius 5.5 x as long as first abscissa; costa 2.25 x as long as stigma; medius 0.7 times as long as costa, 1.5 x as long as basal; nervulus



Figs. 1 - 3. *Chelonus (Microchelonus) pikenii* sp. nov. (male).
1. Adult, lateral view; 2. Head, frontal view; 3. Propodeum with abdomen.

inclivous, distad, 0.7 times as long as width of stigma; subdiscoideus sclerotized, 1.75 x as long as stigma; second intercubitus unpigmented, 0.5 times as long as first intercubitus; cubitus 2.25 x as long as stigma; Hind wing: 3.4 x as long as broad; subcostella 0.9 times as long as radiella; nervellus reclivous, basad, 1.4 x as long as basella.

Abdomen: 1.9 x as long as wide, broadly sessile, apex rounded, slightly shorter than head and thorax combined, coarsely longitudinally striate at basal half, pubescent; apical half reticulately rugose, pubescent; foramen in the apex of the carapace narrow, oval, well margined, 3.55 x as wide as its height.

Genitalia: Gonoforceps, volsellae and aedeagus situated on sclerotic ring; volsella and aedeagus enclosed by gonoforceps, later elongated;

gonosquammae elongate, curved; gonostipes flat; gonocardo slightly rounded; gonolacinae weakly taper apically, teeth absent; apodeme short; distivolsella short, curved, apically moderately pointed; aedeagus without teeth; parameres elongate, apically pointed; subgenital plate transverse, wide than long, sparsely pubescent, anticosta moderately sclerotized; spiculum short, triangular.

Coloration: Black. Scape, fore leg, mid leg, femur and tibia of hind leg basally light brown; stigma, veins reddish-brown; 0.45 basal part of carapace white.

FEMALE : Unknown.

HOLOTYPE: MALE; Ahmednagar, Maharashtra INDIA, 13. viii. 1988, Malaise trap, S.M. Kurhade Coll.; Antenna, wings, legs and genitalia mounted on slides and labelled as above.

Paratype: 6 males, data same as holotype.

Comments: According to the key to the Indian species of the subgenus *Microchelonus* by Rao and Chalikwar (1971), the new species, *Chelonus (Microchelonus) pikenii* runs close to *Chelonus (Microchelonus) notaulii* Rao and Chalikwar (1971) in the characters of: (i) face with a median longitudinal carina and (ii) antenna 24 segmented. However the new taxa differs from *notaulii* in the following characters: (i) head 2.5 x as wide as long, (ii) frons without median longitudinal carina, (iii) malar space 1.25 x the basal width of mandible, (iv) face 0.5 times as high as wide, (v) fore wing 2.6 x as long as broad and (vi) stigma 2.8 x as long as wide. The new species superficially resembles with *C. (Microchelonus) nigripes* Rao and Chalikwar (1971), but differs in the following characters: (i) head 2.5 x as wide as long, (ii) malar space 1.25 x as the basal width of mandible, (iii) fore wing 2.6 x as long as broad, (iv) stigma 2.8 x as long as wide and (v) antenna 24 segmented.

***Chelonus (Microchelonus) raoi* sp. nov.**
(Figs. 4-6)

FEMALE: 2.5 - 2.8 mm. (Fig. 4). Head (Fig. 5) 2.45 x as wide as long; vertex rugose, finely punctate, sparsely pubescent; interocellar space 0.7 times the ocellocular space; frons without median longitudinal carina, transversely striate medially, rugose on lateral sides; face 0.5 times as long as wide, rugose, punctate, pubescent; clypeus 0.8 times as long as wide, closely, deeply punctate, pubescent; clypeal fovea distinct; mandible bidentate, 2.5 x as long as its basal width; malar space 2.35 x as long as basal width of mandible, rugoso-punctate, pubescent; temple 0.5 times as broad as height of the eye, rugose, striate, punctate, pubescent; eye 2.5 x as long as wide, sparsely pubescent; occiput smooth, margined; antenna filiform, extending back nearly to the base of carapace, 2 + 14 segmented; scape 2.25 x as long as wide; pedicel 1.5 x as long as wide; post pedicel 2.65 x as long as wide; penultimate segment as long wide; terminal segment 2 x as long as wide; antenna pubescent throughout the length.

Thorax: 1.25 x as long as wide; collar rugose, sparsely punctate; pronotum rugoso-reticulate, sparsely punctate, pubescent; mesoscutum reticulate, rugose, sparsely punctate, pubescent; notauli absent; disc of scutellum moderately convex, smooth at the centre, crenulated on basal and lateral sides; furrow crenulated at the base of the propodeum; propodeum (Fig. 6) reticulately rugose, with three median longitudinal carinae; apical transverse carina raised; outer pair of propodeal apophysis distinct, acute; inner pair not distinct; propodeal spiracle minute, circular; mesopleurum reticulately rugose, foveolate, pubescent; mesopleural furrow crenulately rugose, foveolate, pubescent; metapleurum reticulately rugose, foveolate, pubescent. *Fore wing:* 2.6 x as long as broad; stigma 2.6 x as long as wide; radial cell on wing margin 1.3 x as long as stigma; metacarpus as long as stigma; costa 1.35 x as long as medius; 1st abscissa of radius 0.65 times the width

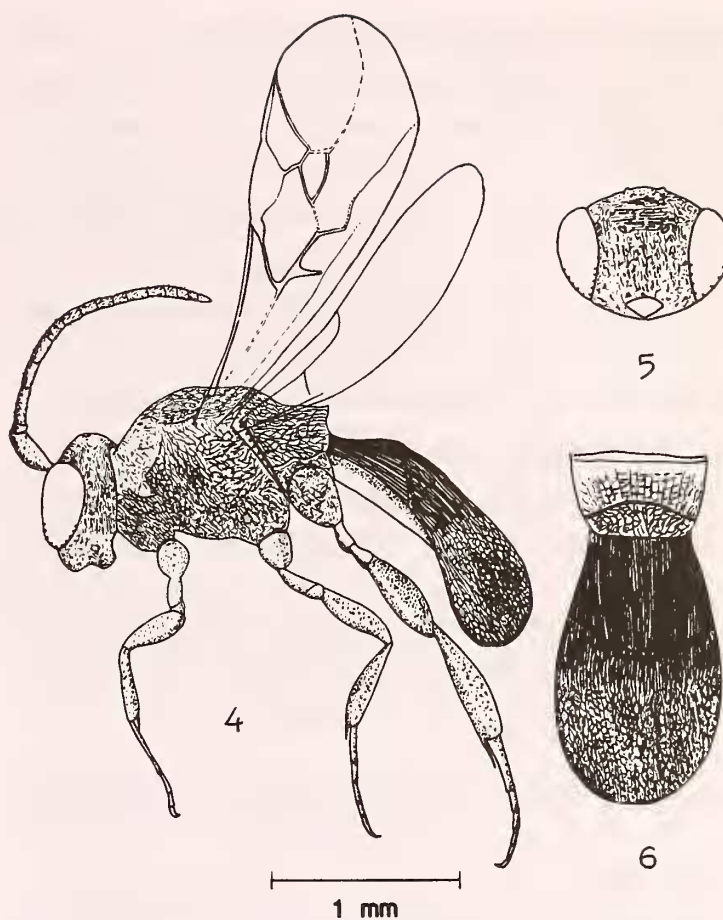
of stigma; 2nd abscissa of radius as long as 1st abscissa; 3rd abscissa of radius as long as length of stigma, 6 x as long as 2nd abscissa; discoidal cell confluent with 1st cubital cell; second inter cubitus 0.5 times the first intercubitus, unpigmented; basal 0.85 times the length of stigma, 0.5 times the length of medius; discoideus 0.65 times the length of medius; nervulus inclivous, distad, 0.85 times the width of stigma; recurrent unpigmented, as long as nervulus; submedius 1.35 x as long as medius; brachius 1.4 x as long as width of stigma; subdiscoideus 1.10 x as long as medius. *Hind wing*: 3.85 x as long as broad; sub costella 1.65 x as long as mediella; basella 0.1 times as long as mediella. Hind coxa globular, shallowly punctate, pubescent, 1.5 x as long as wide; 1st trochanter 1.75 x as long as wide; 2nd trochanter 1.65 x as long as wide; femur closely, deeply punctate, pubescent, 3.3 x as long as wide; tibia 1.25 x as long as femur, punctate, pubescent, 4.15 x as long as wide apically; longer tibial spur 3 x as long as basitarsus; basitarsus 0.4 times the length of tibia; tarsus 5 segmented; claw simple, bifid.

Abdomen: Broadly sessile, 1.7 x as long as wide, apex rounded, longitudinally striate at basal half becoming reticulately rugose on apical half, finely pubescent, with two strong posteriorly converging keels arising from the base; foramen in the apex of carapace wanting.

MALE: Unknown.

HOLOTYPE: FEMALE; Aurangabad, Maharashtra: INDIA: 15. ix. 1990, reared on *Heliothis armigera* larva by S.N. Ambekar; Antenna, wings and legs mounted on slides and labelled as above.

Comments: According to the key to the Indian species of the subgenus *Microchelonus* Rao and Chalikwar (1971), *Chelonus (Microchelonus) raoi* sp. nov. runs close to *C.(M.) notaulii* Rao and Chalikwar (1971) in the characters of : (i) occiput



Figs.4 - 6. *Chelonus (Microchelonus) raoi* sp. nov. (Female). 4. Adult, lateral view ; 5. Head, frontal view ; 6. Propodeum with abdomen.

smooth, margined, (ii) 16 segmented antennae, (iii) propodeum reticulately rugose, (iv) outer pair of propodeal projections distinct, (v) propodeal spiracle minute, small, circular, (vi) mesopleurum reticulately rugose, (vii) coxae globose, (viii) carapace broadly sessile, apex rounded, (ix) carapace longitudinally striate at basal half, (x) foramen in the apex of carapace absent. However, the new taxa is distinguished from *Chelonus (Microchelonus) notaulii* by the following characters: (i) vertex rugose, and finely punctate, (ii) frons without median longitudinal carina, (iii) frons transversely striate, (iv) clypeus closely, deeply punctate, (v) malar space 2.35 x as the basal width of mandible, (vi) scape 2.25 x as long as its own width, (vii) mesoscutum reticulately rugose, (viii) notauli absent, (ix) fore wing 2.6 x as long as broad, (x) stigma 2.6 x as long as wide, (xi) first abscissa of radius 0.65 times the breadth of stigma and (xii) basitarsus 0.4 times as long as tibia.

The new taxa superficially resembles *C. (M.) nigripes* Rao and Chalikwar (1971) but differs from it in the following characters: (i) vertex rugose, finely punctate, (ii) inter ocellar space 0.7 times the ocellular space, (iii) frons without median longitudinal carina, (iv) clypeus closely, deeply punctate, (v) malar space 2.35 x as the basal width of mandible, (vi) scape 2.25 x as long as wide, (vii) temple rugose, striate, (viii) mesoscutum reticulate, rugose, (ix) disc of scutellum smooth at the centre, (x) mesopleurum reticulately rugose, (xi) tibia 1.25 x as long as femur and (xii) fore wing, 2.6 x as long broad.

The name *raoi* is in honour of Dr. S.N. Rao, Ex-Professor of Entomology, Department of Zoology, Marathwada University, Aurangabad.

KEY TO THE INDIAN SPECIES OF *Chelonus (Microchelonus)* PANZER
BY RAO AND CHALIKWAR (1971)

1. Front and middle coxae yellow; malar space 1.3 x the basal width of mandible. Basal 0.45 part of carapace white; ovipositor 1.25 x as long as the hind basitarsus; male with antenna 24-25 segmented, foramen in the apex of carapace 3.5 x as wide as high.....
.....*notaulii* Rao and Chalikwar, 1971.
- Front and middle coxae not yellow; malar space more or equal to the basal width of mandible 2
2. Fore and mid legs light brown; malar space 1.25 x as the basal width of mandible. Frons without median longitudinal carina; male with antenna 24 segmented; foramen in the apex of carapace 3.55 x as wide as high

-*pikeni* sp. nov.
- Fore and mid legs reddish-brown or black; malar space equal or more than twice the basal width of mandible.....3
3. Legs dark reddish-brown; malar space 2.35 x the basal width of mandible. Notauli absent. Antenna 16 segmented. Basal 0.45 part of carapace yellowish - white.....*raoi* sp. nov.
- Front and middle coxae reddish -brown or black; malar space equal to the basal width of mandible4
4. Lateral lobes at base of scutellum present; stigma 2.6 x as long as wide; radial cell on wing margin 0.75 times as long as stigma and 0.8 times as long as third abscissa of radius; basal 0.4 part of carapace yellow; male with antenna 25 segmented, extending to the middle of carapace, foramen in the apex of carapace narrow, 4.5 x as wide as high.....*nigripes* Rao and Chalikwar, 1971.
- Lateral lobes at the base of scutellum absent; stigma 3.0 x as long as wide; radial cell on wing margin almost as long as stigma; basal third part of carapace white; male with antenna 24-26 segmented; extending to the apex of carapace, foramen in the apex of carapace 4.0 x as wide as high*heliopae* Gupta, 1955

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